Abstract 1

Berkeley in Silicon Valley: New Directions in Chemistry and Engineering

June 9, 2001, Santa Clara, CA.

A biomimetic approach toward artificial bone-like materials

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Department of Chemistry, Materials Sciences Division, Lawrence Berkeley National Laboratory and Howard Hughes Medical Institute, University of California, Berkeley, CA.

Bone consists of microcrystalline hydroxyapatite and collagen, an elastic protein matrix that is decorated with mineral-nucleating phosphoproteins. Our rational design of artificial bone-like material uses natural bone as a guide. Hydrogel and self-assembling polymers that possess anionic groups suitably positioned for nucleating biominerals, and therefore mimic the natural function of the collagen-phosphoprotein matrix in bone, were designed to direct template-driven biomimetic mineralization of hydroxyapatite. The monomer library synthesis, hydrogel and self-assembling polymer formation and structural characterization of polymer scaffolds on both micro- and nano-levels are presented.

Abstract 2

Gordon Research Conference: Biomaterials - Biocompatibility and Tissue Engineering.
July 22-27, 2001, Plymouth, NH.

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